Remarks/Arguments

Applicant thanks Examiner Cao for the careful examination of this application and for the clear explanation of the claim rejections.

In response to the Office action, applicant cancels claims 1-15 and 23-26. Regarding claim 16-22, which stand rejected as being anticipated by the Ball patent (US 6,426,564), the Hayes patent (US 5,861,323), and the Cobbley patent (US 6,551,917), applicant respectfully submits that because the references do not disclose all the claim limitation, the 102 rejections are improper. Claim 16-22, therefore, stand patentable:

Claim 16 is the only independent claim among all pending claims 16-22. It describes a ball film for fabricating or testing integrated circuit. Among the elements of limitation in claim 16 is that the metal balls each movably contained within a slot. The Ball patent does not disclose metal ball movably contained within a slot; the Hayes patent does not disclose ball movably contained within a slot; and the Cobbley patent does not disclose metal ball movably contained within a slot.

The Ball patent discloses a system for attaching solder balls to an electronic device. The system includes a tape with recesses for receiving and retaining solder balls.[1] The tape "secures" the solder balls with a adhesive surface at the bottom of the recess:

> Regardless of the placement means used, the tape segments emerge with the blind recesses filled as shown in FIG. 8A. The second adhesive surface 26' secures each solder ball 16 in place.[2]

It is clear that the Ball patent discloses a tape that secures solder balls in the recesses with adhesive; it does not disclose balls movably retained.

Likewise, the Hayes patent discloses a process for manufacturing arrays of metal balls for interconnect testing and interconnect bonding of microelectronic devices with substrates. The process includes "securing" metal balls in apertures in a film.[3] The film secures the metal balls either with an adhesive coating or by softening the film itself so the metal balls would adhere to it:

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[1] See US 6,426,564, Abstract.
[2] Ibid., col. 8, ll. 3-7.
[3] See US 5,861,323, Abstract.

> As the array membrane 22, with solder or metal balls 86 deposited in the apertures 24, moves past the doctor blade, heat may be applied by attaching station 130 to temporarily soften adhesive layer 26 (or array membrane 22 if an adhesive layer is absent) to attach and assure that the solder or metal balls 86 will not fall out of apertures 24 during later handling of the array 20.[4]

It is clear that the Hayes patent discloses metal balls securely attached to a film; it does not disclose balls movably retained in a film.

The Cobbley patent discloses a method of locating conductive spheres on bond pads, which has a sticky layer for the conductive spheres to adhere to:

> As shown in drawing FIG. 2, a step in the method of the invention involves the application of a layer 52 of flux or other sticky substance to the bond pads 14 of the substrate 20. In drawing FIG. 2, illustrated is an exemplary silk screen 54 by which the layer 52 is formed, as known in the art. Other methods for prefluxing the bond pads 14 are also well-known and may be used. Any method may be used which provides a sticky layer 52 to which a conductive sphere 12 will adhere. The use of flux, of course, enhances bonding of solder to a bond pad during reflow.
>
> After a layer 52 is formed on the bond pads 14, the lower surface 42 of a stencil plate 30 and the upper surface 16 of a substrate 20 are aligned to provide a desired plate-to-pad gap 56 (see FIG. 3).
>
> The hopper 50A, having conductive spheres 12 therein, is moved in direction 68 across the through-hole pattern 32 of the stencil plate 30, whereby spheres are dropped into each through-hole 34 to become adhered to the bond pads 14 (as shown in FIG. 4).[5]

It is likewise clear that the Cobbley patent discloses a method that including applying a sticky substance on the bond pads to secure the conductive spheres; it does not disclose balls movably retained in a film.

In summary, the references cited in the Office action do not disclose movably containing solder balls in the slots in a ball film as required in claim 16, therefore, they do not anticipate claim 16 and claim 16 stands patentable over the references.

Clams 17-22 properly depend from claim 16 and they stand patentable as well at least by virtue of their dependency.

In conclusion, applicant respectfully submits that this application is in allowable form; the pending claims 16-22 stand patentable because the cited references fail to disclose all the

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[4] Ibid., col. 6, ll. 31-38.
[5] US 6,561,917, col.6, ll. 38-57.

limitations in the claims. Applicant respectfully requests further examination of this application and timely allowance of the pending claims.

Respectfully submitted,

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